CLAIMS

What is claimed is:

1. A method of debugging software comprising:

obtaining a software module;

obtaining a first input test vector;

obtaining a bug list;

generating a first output vector by applying said first input test vector to said software module;

applying a comparison test to said first output vector to determine whether a bug exists in said software module;

applying a module decomposition test to said software module when the result of said comparison test is positive; and

appending said software module and said first input test vector to said bug list when the result of said module decomposition test is negative.

2. The method of claim 1 wherein said comparison test comprises:

obtaining an optimal result vector;

comparing said first output vector to said optimal result vector; and

determining whether said first output vector is at variance with said optimal result vector.

3. The method of claim 2 wherein the step of generating a bug list further comprises:

obtaining a module decomposition list comprising two or more submodules of said software module when the result of said module decomposition test is positive; and

iteratively processing said module decomposition list.

4. The method of claim 3 wherein the iterative processing step comprises:

obtaining a second input test vector such that the application of said second input test vector to said submodule will generate a second output test vector; and

recursively processing said submodule and said second output test vector.

5. The method of claim 4 wherein the trimming step comprises:

obtaining said minimal module;

obtaining said first input test vector; and

applying a vector decomposition test to said first input test vector.

6. The method of claim 5 further comprising:

generating a third output vector by applying said first input test vector to said minimal module when the result of said vector decomposition test is negative;

applying said comparison test to said third output vector to determine whether said first input test vector recreates the bug; and

appending said input test vector to a test list when the result of said comparison test is positive.

7. The method of claim 6 further comprising:

obtaining a vector decomposition list comprising two or more subvectors of said first input test vector when the result of said vector decomposition test is positive; and

iteratively processing each entry in said vector decomposition list by recursively applying said vector decomposition test to said subvectors.

8. The method of claim 7 in which said software module and said input test vector are obtained by iterating through the entries in said bug list.